National Aeronautics and Space Administration
Goddard Space Flight Center

Inside Wallops

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The First Space Shuttle Returns to Service Better Than Ever

On the eve of the 20th anniversary of its maiden voyage, America's first space shuttle orbiter, Columbia, returns to service this week fresh from a year and a half of maintenance and upgrades that have made it better than ever.

"Columbia is a safer shuttle today than the day it first launched," said Astronaut John Young, who commanded the first-ever space shuttle mission aboard Columbia in April 1981. "Columbia has gotten better as it has gotten older. It's gone from test flights to doing things we once never dreamed we could do. Although space flight will always carry risks, we must keep pace with advances in technology and improve the shuttle when we can, ensuring it is as safe as it can be."

Columbia will be carried piggyback atop the NASA 747 Shuttle Carrier Aircraft from the Boeing shuttle facility in Palmdale, CA, to the Kennedy Space Center, FL, to begin preparations for its 27th trip to space.

Columbia is launched Nov. 19, 1996

"As its 20th birthday approaches, Columbia is fit to fly for many more years," Space Shuttle Program Manager Ron Dittemore said. "It is safer and more capable than it has ever been, a result of the thorough maintenance and continuous improvements that have been incorporated regularly into the shuttle fleet."

More than 100 modifications and improvements have been made to Columbia, highlighted by the installation of a new "glass cockpit" that replaced mechanical instruments with 11 full-color, flat-panel displays.

The new cockpit is lighter, uses less electricity and sets the stage for the next generation of improvements, a "smart cockpit" under development that will make the cockpit even more user-friendly. Columbia is the second of NASA's four space shuttles to be fitted with the new "glass cockpit."

Columbia spent a year and a half at the Palmdale facility. Other improvements include weight reductions that have increased the amount of cargo Columbia can carry to orbit by hundreds of pounds. To save weight, almost 1,000 pounds of unused wire — left over from equipment and sensors that were used on Columbia for only the first few space shuttle test flights — were removed.

Because of wiring damage found in the shuttle fleet in 1999, comprehensive inspections of 95 percent of Columbia's more than 200 miles of wire were performed at Palmdale. To prevent such damage from recurring, technicians smoothed rough edges throughout the shuttle and encased wiring in high-traffic work areas in protective tubing. Such inspections and protective measures will be a regular feature of all future shuttle major maintenance.

Preliminary preparations were made that could allow Columbia to use a space station docking system, enabling it to join the rest of the shuttle fleet as a future courier to the International Space Station if needed. In addition, Columbia's crew cabin floor was strengthened, the heat protection on its wings was enhanced and protection from space debris was added to its cooling system, making it a safer spacecraft.

While Columbia was in California, technicians scoured the shuttle during months of intensive structural inspections, using the latest technology to check for even minute signs of fatigue, corrosion or broken rivets or welds. Upon arrival at Kennedy, Columbia will begin preparations for its next trip into space, scheduled for this fall.

Wallops Shorts.....

Rocket Launch

A NASA Terrier Black Brant (MOD 2) sounding rocket was successfully launched on Feb. 22 from the White Sands Missile Range, N.M. The payload was a UV/optical astrophysics experi-ment for the Naval Research Laboratory. Dr. Ray Cruddace was the principal investigator. The payload was recovered.

On the Road

Phil Eberspeaker, Policy and Business Relations Office, visited North Salisbury Elementary School on Feb. 23 and talked to students about NASA and Wallops.

Mike Savoy, Teacher-on-Loan, and Phil Eberspeaker participated in a Career Day event held at the City Centre in Salisbury on Feb. 24.

NASA Balloon Flight Aborted

After developing a leak, the test flight of a new NASA scientific balloon was terminated 4 hours 17 minutes following launch Sunday morning from Alice Springs, Australia.

Artist's Rendition

The Ultra-Long Duration Balloon (ULDB) was launched at 9:21 a.m., Feb. 25. (Alice Springs local time) (6:51 p.m. EST, Feb. 24). The balloon reached an altitude of approximately 85,000 feet (25,907 meters) prior to beginning a descent.

The flight was terminated at an altitude of 79,000 feet (24,078 meters). The balloon and its scientific payload landed 132 miles (212 kilometers) west-southwest of the launch site. There were no injuries or damage to personal property. The payload landed upright and appears to be in excellent condition. Recovery operations are underway.

"We are obviously disappointed with this first full-scale test flight of the ULDB. A team is reviewing data from the flight and examining the recovered balloon. A recommendation is expected by the end of this week concerning the possible flight of a backup balloon that NASA has available in Alice Springs," said Steve Smith, Chief of theBalloon Program Office.

"We are confident in the concept of the ULDB and in providing scientists with a new means of studying the Earth and space," Smith said.

The ULDB is the largest-single cell, super pressure (fully sealed) balloon ever flown. While the test flight was expected to last only about two weeks and circumnavigate the globe, the ULDB is designed to support missions for up to 100 days.

The ULDB floats above 99 percent of the Earth's atmosphere and was carrying a 4,500 pound (2041.2 kilogram) payload. The pumpkin-shaped balloon is composed of a lightweight polyethylene film about the thickness of ordinary plastic food wrap.

Further information on the ULDB program can be found at: http://www.wff.nasa.gov/~uldb/index.html

Wallops Employee Gets Suited Up

PRC, Inc.Photo

Ken Walthall, (above), Orbital Science Corporation, has just gotten a new suit that will make life must easier. Whether inside or on his way to the Cafeteria, Walthall, who works in Building F-10, can usually be seen holding an umbrella. The umbrella has been necessary not to shield him from rain but from the harmful effects of light.

Sarah Ann Moody, founder and president of the HED Foundation (hypohidrotic ectodermal dysplasia) accompanied by her husband, Ray, came to Wallops Feb. 20 to present Walthall with a NASA developed light protective suit.

The liquid-cooled garment originally was developed to protect the Apollo astronauts from high temperatures on the moon. The HED Foundation was founded in 1986 to work with NASA in developing its heat transfer technology for civilian use and provides the special vests and suits to children.

Walthall suffers from a rare genetic disease, erythropoietic protoporphyria (EPP). The victims of EPP are highly sensitive to most of the visible light spectrum.

Exposure to light, from either the sun or most indoor lighting, makes his skin itch, burn and ulcerate. A reaction can begin within minutes and elevate to skin cancer if there is prolonged exposure. Unfortunately, there is no known cure for EPP.

Until now Walthall has carried an umbrella to shield himself from the sun and lights inside local stores. He has mostly stayed inside except at night. Now the umbrella may be a thing of the past.

"Now I can go deep-sea fishing, play softball or build an ultralite plane and go fly it. I've always wanted to do those things and never could", said Walthall.

Information on the HED Foundation is available on their web site: www.hedfoundation.org

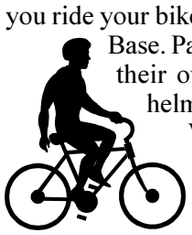
NASA Visitor Center Events Scheduled for March

March 3 — Model Rocket Launch

A model rocket launch will be held at 1 p.m. Models of various rockets will be launched. Model rocketeers are invited to bring their own rockets and launch them. The launch will be canceled if it is raining or winds exceed 18 mph.

March 4 — Bike Tour of the NASA Main Base

Learn about Wallops Flight Facility as you ride your bike on the NASA Main Base. Participants must bring their own bicycles, wear a helmet and sign up at the Visitor Center. The tour starts at 3 p.m., is 3 miles long and takes approximately an hour. The tour will be canceled if it is raining.



March 17 — Bottle Rocket Launches

Bring an empty 2-liter plastic, soda bottle and learn how to make and fly a bottle rocket at 1 p.m. The program will be canceled if it is raining.

Puppets in Space

Puppets in Space is a 10-minute puppet show presented at 11 a.m. on Saturdays and Sundays for children of all ages. Puppet astronauts and Sam the monkey will explore space flight and the space suit. An eight-minute version of the film "Astrosmiles" follows the puppet show.

Humans in Space

Humans in space is a 30-minute program presented at 1 p.m. on Sundays. Children of all ages will learn what it's like to live and work in space including a review of what the astronauts eat and their wardrobes. The program is followed by a hands-on activity that gives children the opportunity to create their own "space helmet".

Space Ace Certificate

Children 5 to 10 years old can earn a "Space Ace" certificate and a lithograph any day they come to the Visitor Center by completing an activity sheet.

The Visitor Center will be open from 10 a.m. to 4 p.m., Thursday through Monday. The complex is closed on Tuesday and Wednesday. For further information, call x2298 or visit the web site at: http://www.wff.nasa.gov/vc/

Mardi Gras Celebration

March 9, 2001
8 p.m. to Midnight

Mysic by the Zydecats

Cajun Food

Tickets $10 per person. Call Bev Hall, x1714 for further information.

Innovative FEM Solutions to Challenging Problems

Abstracts are now being accepted for the second Finite Element Modeling Continuous Improvement (FEMCI) Workshop on Innovative FEM Solutions to Challenging Problems, May 16-17, 2001 . The workshop is hosted by the FEMCI group of the Mechanical Systems analysis and Simulation Branch (Code 542) at NASA Goddard Space Flight Center.

The workshop format will include formal podium presentations and an informal poster session. Prospective presenters are encouraged to submit abstracts for presentations and/or posters that address topics in finite element modeling and analysis that are new, innovative, or differ from established techniques. Specify your preference for podium presentation and/or poster session. Details regarding the submission of abstracts can be found at: http://femci.gsfc.nasa.gov/workshop/

Interested persons are encouraged to add their e-mail address to the announcement list that will provide important updates on the workshop, such as when the online registration becomes available. You can join the list online at: http://femci.gsfc.nasa.gov/workshop/announce.html or by sending an e-mail message with your name in the message body, with no subject to: join-workshop2001@femci.gsfc.nasa.gov

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